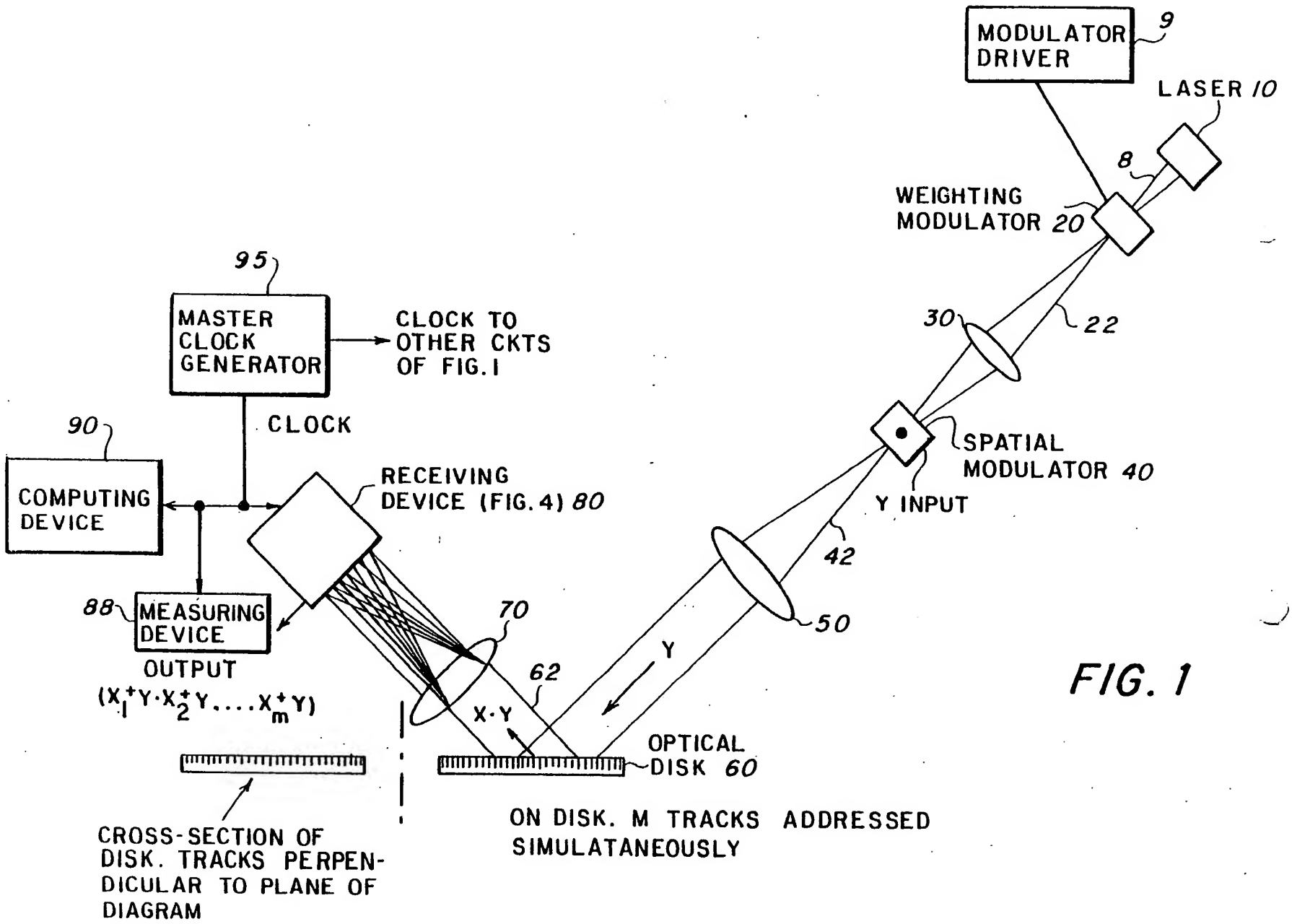

MODULATOR DRIVER
9
LASER 10
8
WEIGHTING MODULATOR 20
30
22
SPATIAL MODULATOR 40
Y INPUT
42
50
95
MASTER CLOCK GENERATOR
CLOCK TO OTHER CKTS OF FIG. 1
CLOCK
90
COMPUTING DEVICE
RECEIVING DEVICE (FIG. 4) 80
88
MEASURING DEVICE
OUTPUT
$(X_1^+Y \cdot X_2^+Y \ldots X_m^+Y)$
70
62
Y
X·Y
OPTICAL DISK 60
CROSS-SECTION OF DISK. TRACKS PERPENDICULAR TO PLANE OF DIAGRAM
ON DISK. M TRACKS ADDRESSED SIMULATANEOUSLY

FIG. 1

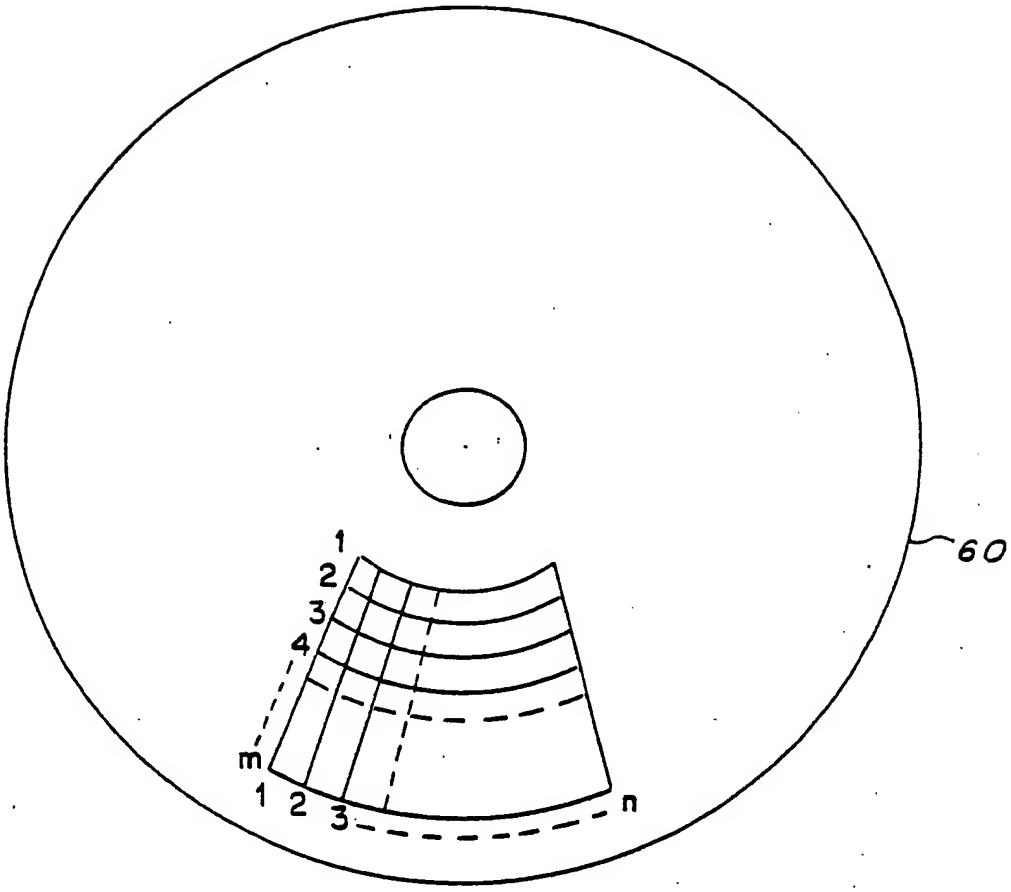


FIG. 2

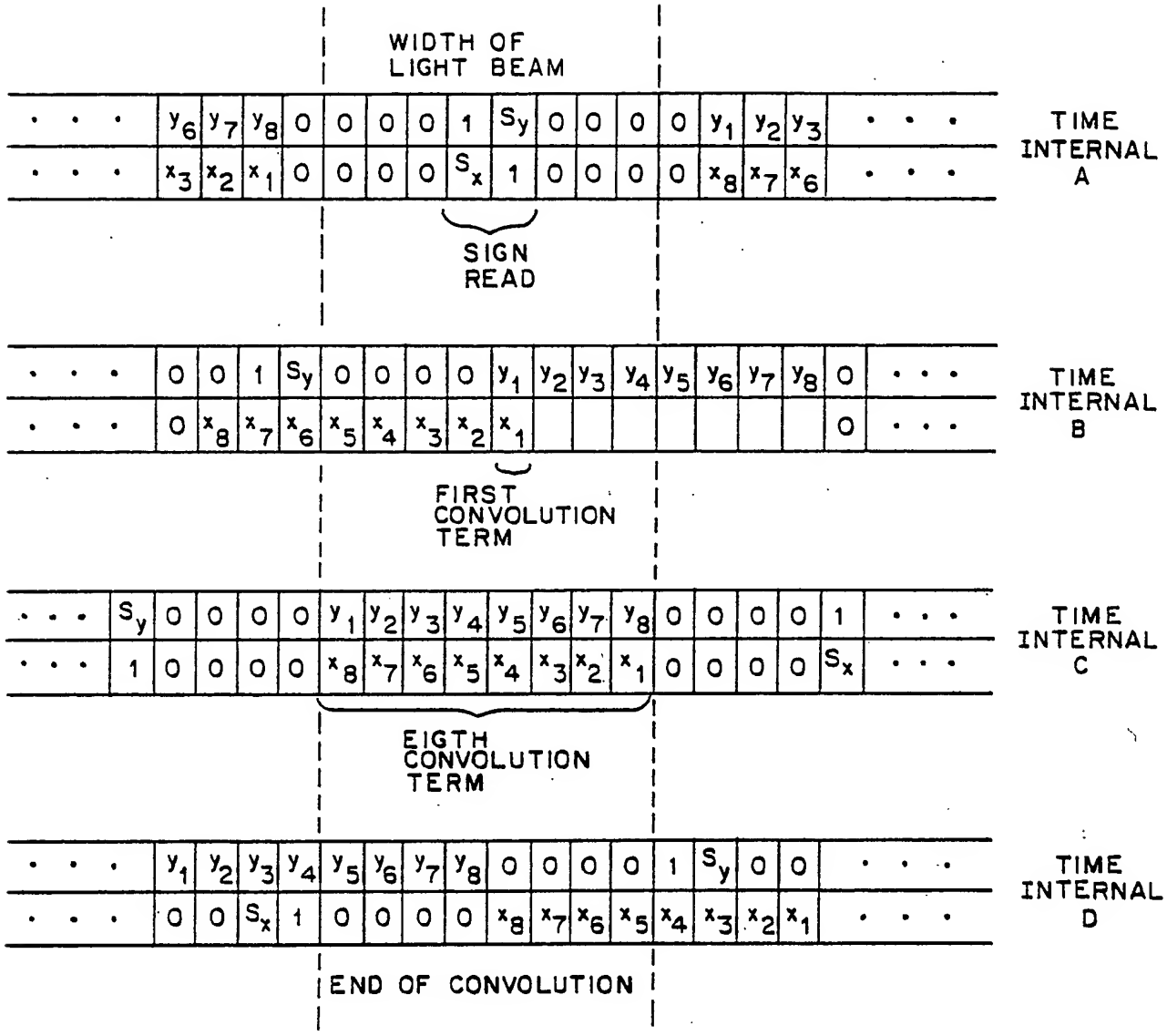

WIDTH OF LIGHT BEAM
TIME INTERNAL A
SIGN READ
TIME INTERNAL B
FIRST CONVOLUTION TERM
TIME INTERNAL C
EIGTH CONVOLUTION TERM
TIME INTERNAL D
END OF CONVOLUTION

FIG. 3

S_x	S_y	Σ	CCD
0	0	0	+
0	1	1	-
1	0	1	-
1	1	2	+

FIG. 4A

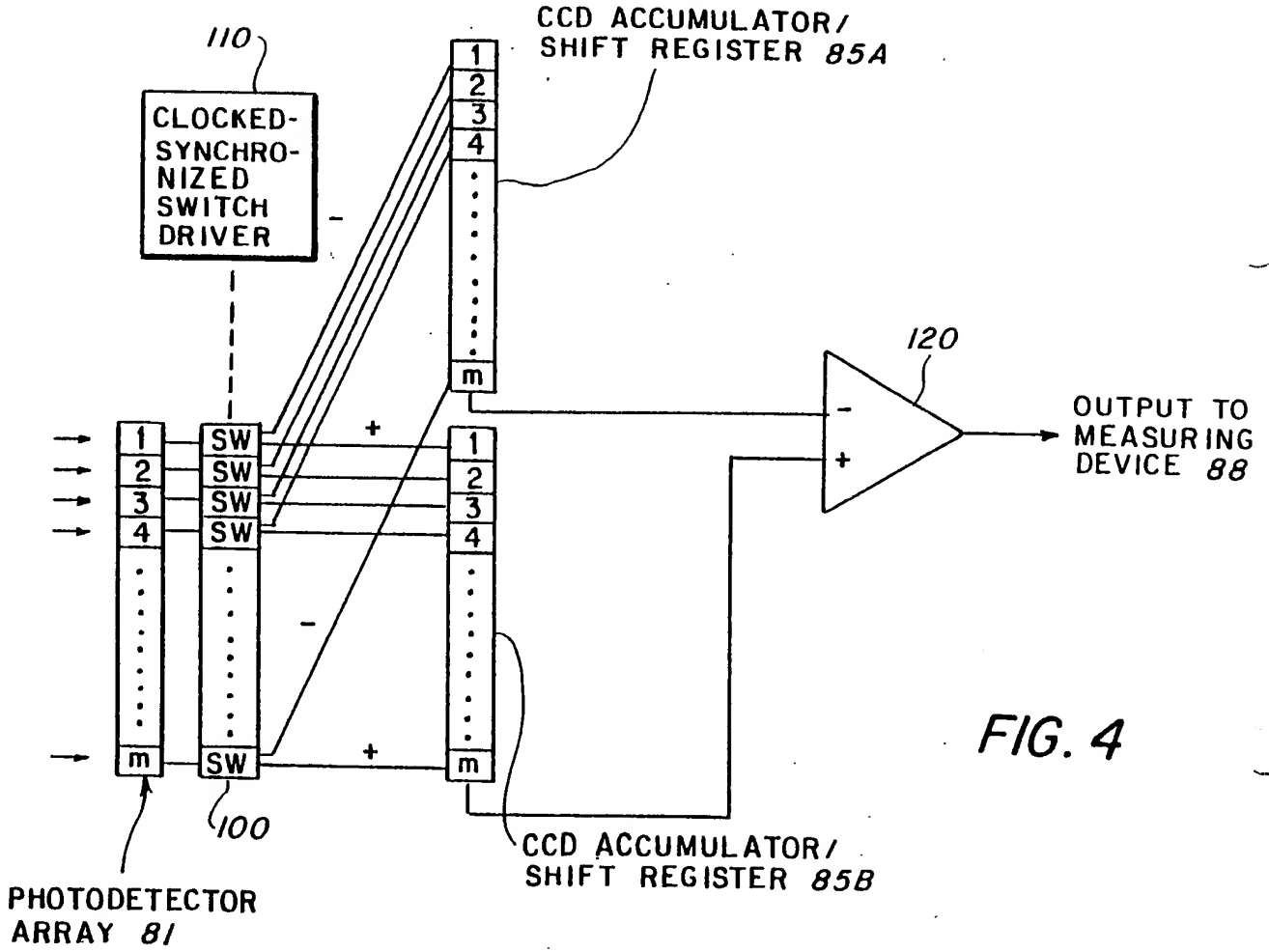


FIG. 4

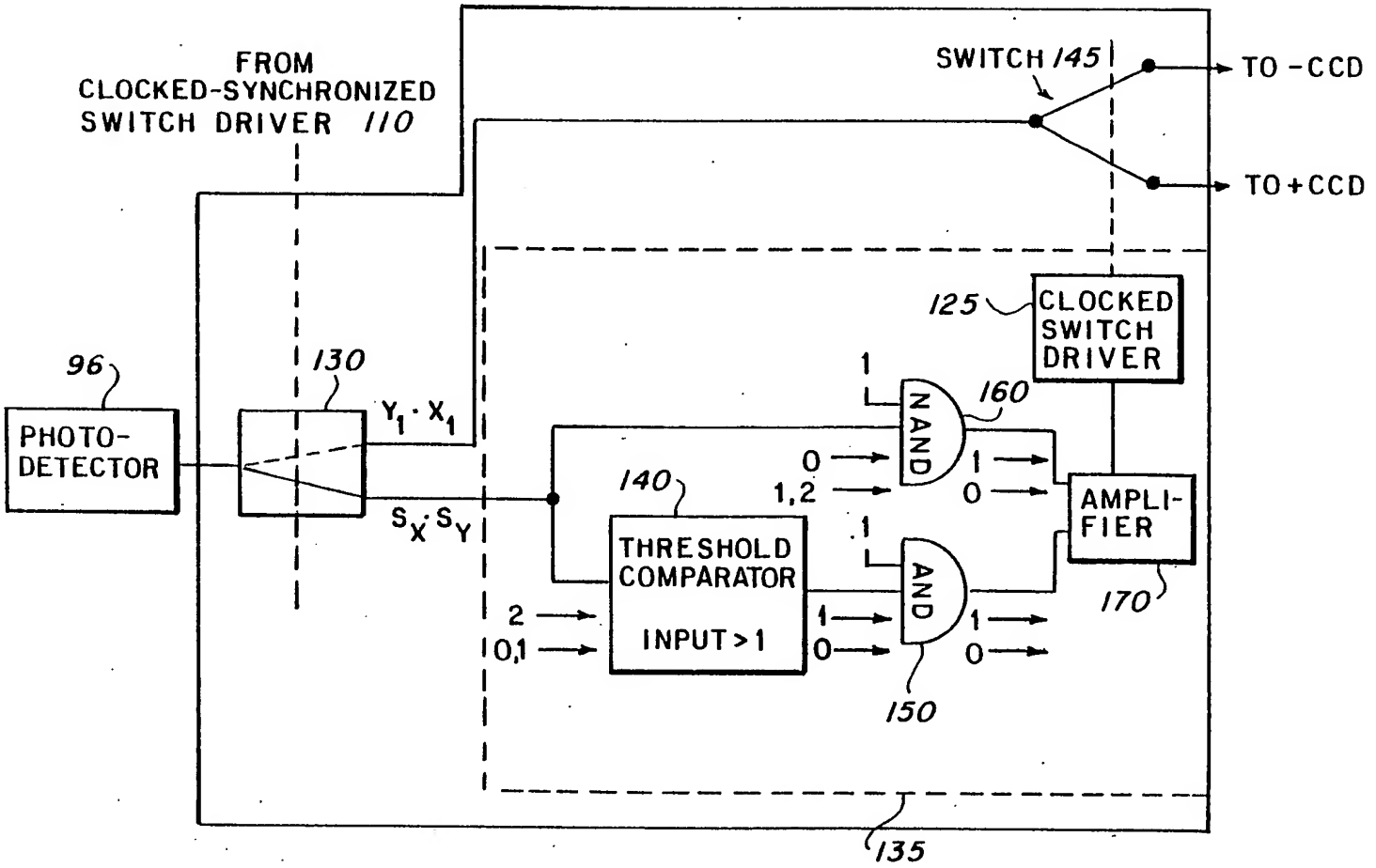

FROM
CLOCKED-SYNCHRONIZED
SWITCH DRIVER 110
SWITCH 145
TO -CCD
TO +CCD
125
CLOCKED
SWITCH
DRIVER
96
PHOTO-
DETECTOR
130
$Y_1 \cdot X_1$
$S_X \cdot S_Y$
140
THRESHOLD
COMPARATOR
INPUT > 1
2
0,1
1
NAND
160
0
1,2
1
0
AND
1
0
1
0
150
AMPLI-
FIER
170
135

FIG. 5

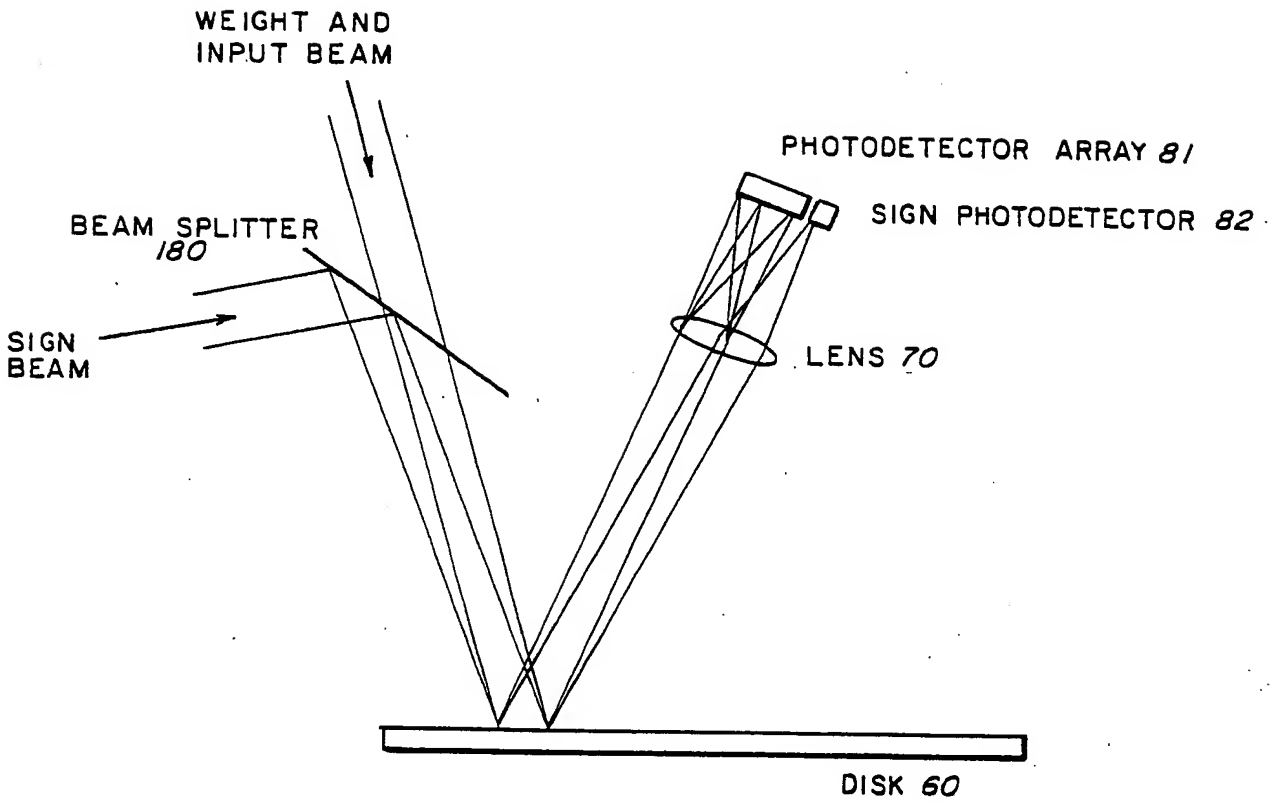

WEIGHT AND
INPUT BEAM
PHOTODETECTOR ARRAY 81
SIGN PHOTODETECTOR 82
BEAM SPLITTER
180
SIGN
BEAM
LENS 70
DISK 60

FIG. 6

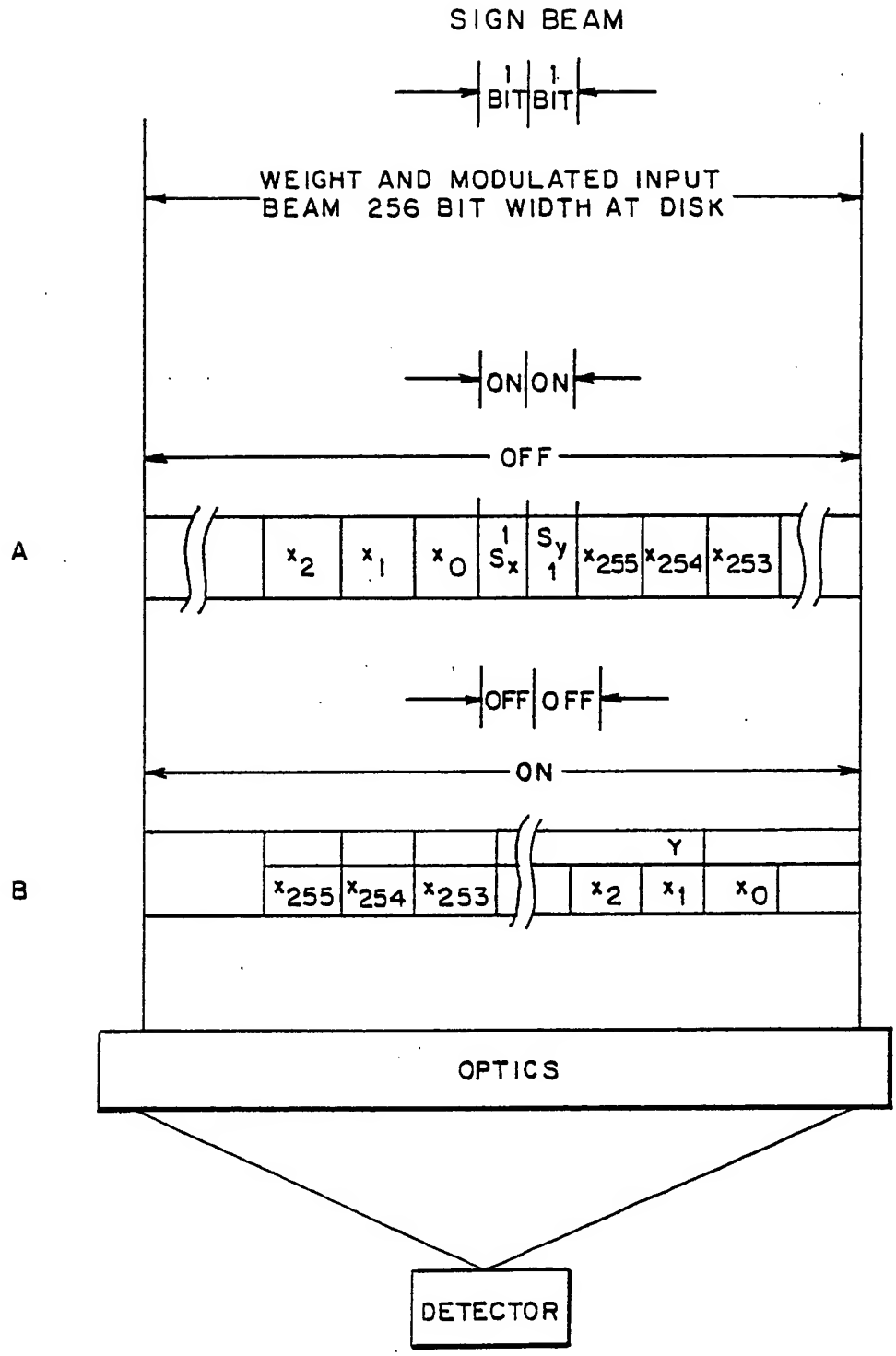

SIGN BEAM
1 BIT
1 BIT
WEIGHT AND MODULATED INPUT BEAM 256 BIT WIDTH AT DISK
ON
ON
OFF
A
x_2 x_1 x_0 S_x^1 S_{y_1} x_{255} x_{254} x_{253}
OFF
OFF
ON
B
Y
x_{255} x_{254} x_{253} x_2 x_1 x_0
OPTICS
DETECTOR

FIG. 7

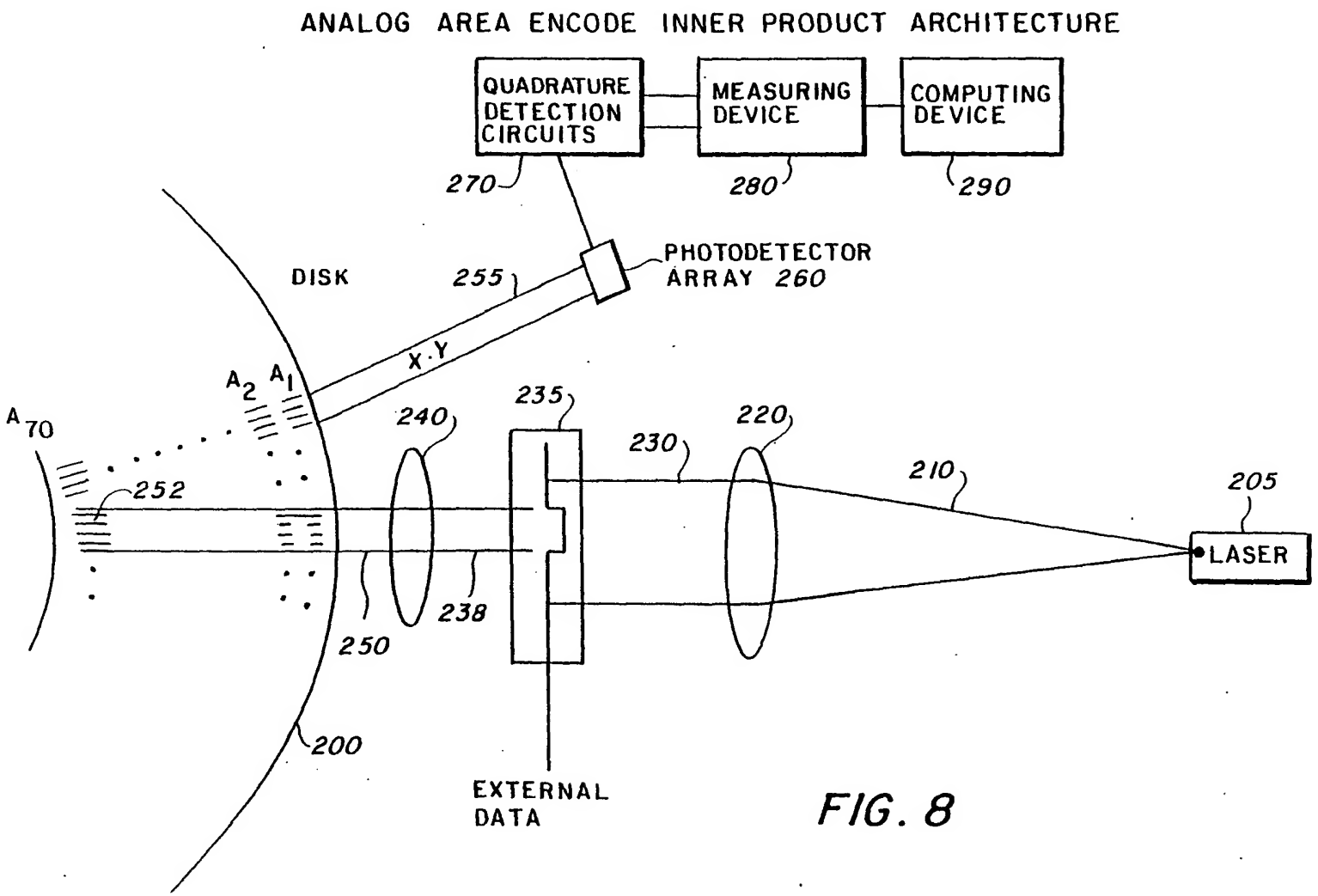

ANALOG AREA ENCODE INNER PRODUCT ARCHITECTURE
QUADRATURE DETECTION CIRCUITS
MEASURING DEVICE
COMPUTING DEVICE
270
280
290
PHOTODETECTOR ARRAY 260
255
DISK
X·Y
A2
A1
A70
252
240
235
230
220
210
205
LASER
250
238
200
EXTERNAL DATA

FIG. 8

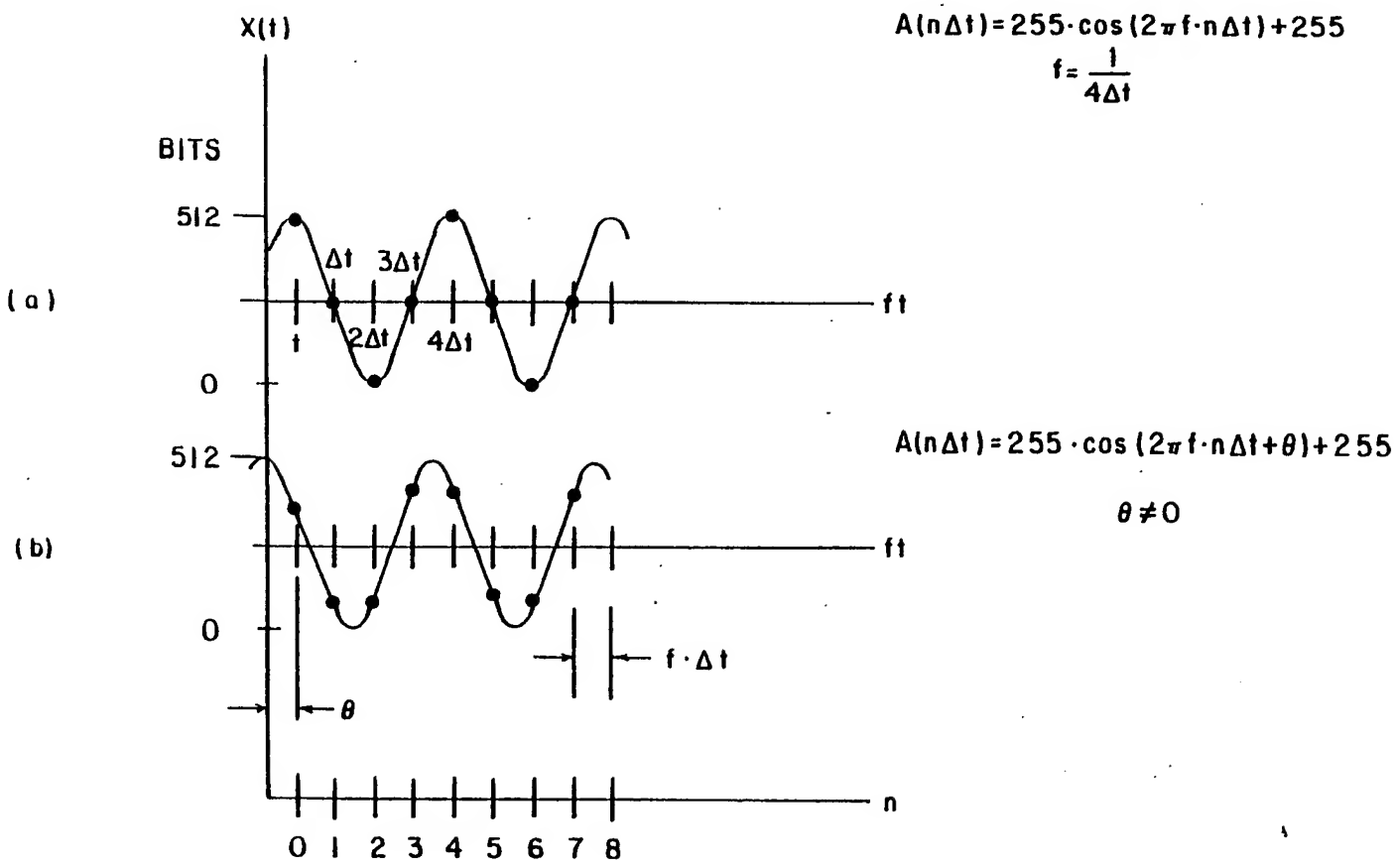
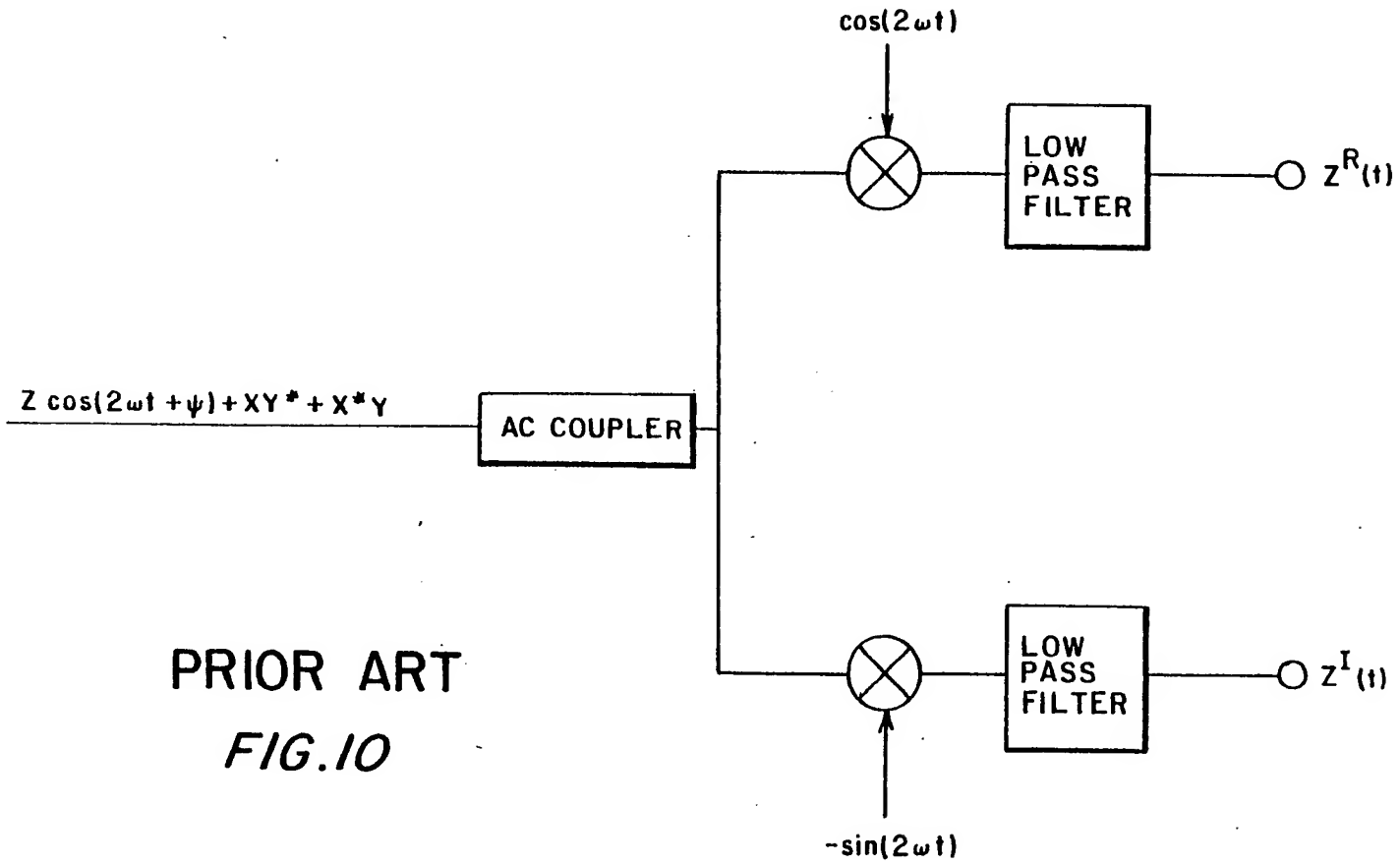

X(t)
BITS
512
0
(a)
Δt
3Δt
t
2Δt
4Δt
ft
512
0
(b)
ft
f·Δt
θ
n
0 1 2 3 4 5 6 7 8
A(nΔt)=255·cos(2πf·nΔt)+255
f=1/4Δt
A(nΔt)=255·cos(2πf·nΔt+θ)+255
θ≠0

FIG. 9



PRIOR ART

FIG. 10